COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Anchor Environmental	**Service Request:**	E1100817
Project:	SJWP Residential Soil Sampling/090557-01.01	**Date Collected:**	8/11/11 1540
Sample Matrix:	Sediment	**Date Received:**	8/12/11
Sample Name:	SJRS010 - A	**Units:**	ng/Kg
Lab Code:	E1100817-011	**Basis:**	Dry
		Percent Solids:	78.7

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method:	1613B	**Date Analyzed:**	8/16/11 1147
Prep Method:	Method Soxhlet	**Date Extracted:**	8/12/11
Sample Amount:	10.544g	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5
Data File Name:	P115271	**Blank File Name:**	P115252
ICAL Date:	03/24/11	**Cal Ver. File Name:**	P115266

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	**0.681**	JK	0.177	1.21	0.63	1.000	1
1,2,3,7,8-PeCDD	**1.23**	JK	0.129	6.03	1.85	1.000	1
1,2,3,4,7,8-HxCDD	**1.83**	J	0.134	6.03	1.06	1.000	1
1,2,3,6,7,8-HxCDD	**7.59**		0.177	6.03	1.07	1.000	1
1,2,3,7,8,9-HxCDD	**8.17**		0.149	6.03	1.29	1.008	1
1,2,3,4,6,7,8-HpCDD	**326**		1.90	6.03	1.03	1.000	1
OCDD	**7570**	B	0.199	12.1	0.89	1.000	1
2,3,7,8-TCDF	**4.18**	C	0.224	1.21	0.84	1.002	1
1,2,3,7,8-PeCDF	**0.747**	J	0.120	6.03	1.59	1.000	1
2,3,4,7,8-PeCDF	**1.15**	JK	0.114	6.03	1.90	1.001	1
1,2,3,4,7,8-HxCDF	**2.93**	JK	0.314	6.03	1.04	1.000	1
1,2,3,6,7,8-HxCDF	**1.59**	J	0.306	6.03	1.18	1.000	1
1,2,3,7,8,9-HxCDF	ND	U	0.347	6.03			1
2,3,4,6,7,8-HxCDF	**2.32**	J	0.348	6.03	1.32	1.000	1
1,2,3,4,6,7,8-HpCDF	**40.5**		0.210	6.03	1.03	1.000	1
1,2,3,4,7,8,9-HpCDF	**1.42**	JK	0.221	6.03	0.84	1.000	1
OCDF	**239**		0.268	12.1	0.88	1.004	1
Total Tetra-Dioxins	**2.41**		0.177	1.21	0.88		1
Total Penta-Dioxins	**11.6**		0.129	6.03	1.38		1
Total Hexa-Dioxins	**103**		0.134	6.03	1.24		1
Total Hepta-Dioxins	**1090**		1.90	6.03	1.04		1
Total Tetra-Furans	**11.4**		0.224	1.21	0.67		1
Total Penta-Furans	**13.7**		0.114	6.03	1.48		1
Total Hexa-Furans	**28.6**		0.314	6.03	1.27		1
Total Hepta-Furans	**153**		0.210	6.03	1.03		1

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Sample Name:	SJRS010 - A	**Units:**	Percent
Lab Code:	E1100817-011	**Basis:**	Dry
		Percent Solids:	78.7

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method:	1613B	**Date Analyzed:**	8/16/11 1147
Prep Method:	Method Soxhlet	**Date Extracted:**	8/12/11
Sample Amount:	10.544g	**Instrument Name:**	E-HRMS-03
		GC Column:	DB-5
Data File Name:	P115271	**Blank File Name:**	P115252
ICAL Date:	03/24/11	**Cal Ver. File Name:**	P115266

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1036.348	52		25-164	0.80	1.008
13C-1,2,3,7,8-PeCDD	2000	1267.758	63		25-181	1.54	1.174
13C-1,2,3,4,7,8-HxCDD	2000	1062.055	53		32-141	1.25	0.990
13C-1,2,3,6,7,8-HxCDD	2000	858.196	43		28-130	1.23	0.992
13C-1,2,3,4,6,7,8-HpCDD	2000	926.223	46		23-140	1.04	1.068
13C-OCDD	4000	1532.166	38		17-157	0.89	1.146
13C-2,3,7,8-TCDF	2000	819.548	41		24-169	0.76	0.977
13C-1,2,3,7,8-PeCDF	2000	1018.949	51		24-185	1.55	1.135
13C-2,3,4,7,8-PeCDF	2000	1081.810	54		21-178	1.52	1.162
13C-1,2,3,4,7,8-HxCDF	2000	971.576	49		26-152	0.51	0.971
13C-1,2,3,6,7,8-HxCDF	2000	940.675	47		26-123	0.52	0.974
13C-1,2,3,7,8,9-HxCDF	2000	1064.249	53		29-147	0.51	1.006
13C-2,3,4,6,7,8-HxCDF	2000	900.565	45		28-136	0.52	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	775.328	39		28-143	0.45	1.044
13C-1,2,3,4,7,8,9-HpCDF	2000	1009.058	50		26-138	0.45	1.078
37Cl-2,3,7,8-TCDD	800	467.687	58		35-197	NA	1.008

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Analytical Report

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Project:	SJWP Residential Soil Sampling/090557-01.01	**Date Collected:**	8/11/11 1540
Sample Matrix:	Sediment	**Date Received:**	8/12/11
Sample Name:	SJRS010 - A	**Units:**	ng/Kg
Lab Code:	E1100817-011	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method: 1613B
Prep Method: Method Soxhlet

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	**0.681**	0.177	1.21	1	1	0.681
1,2,3,7,8-PeCDD	**1.23**	0.129	6.03	1	1	1.23
1,2,3,4,7,8-HxCDD	**1.83**	0.134	6.03	1	0.1	0.183
1,2,3,6,7,8-HxCDD	**7.59**	0.177	6.03	1	0.1	0.759
1,2,3,7,8,9-HxCDD	**8.17**	0.149	6.03	1	0.1	0.817
1,2,3,4,6,7,8-HpCDD	**326**	1.90	6.03	1	0.01	3.26
OCDD	**7570**	0.199	12.1	1	0.0003	2.27
2,3,7,8-TCDF	**2.31**	0.487	1.21	1	0.1	0.231
1,2,3,7,8-PeCDF	**0.747**	0.120	6.03	1	0.03	0.0224
2,3,4,7,8-PeCDF	**1.15**	0.114	6.03	1	0.3	0.345
1,2,3,4,7,8-HxCDF	**2.93**	0.314	6.03	1	0.1	0.293
1,2,3,6,7,8-HxCDF	**1.59**	0.306	6.03	1	0.1	0.159
1,2,3,7,8,9-HxCDF	ND	0.347	6.03	1	0.1	
2,3,4,6,7,8-HxCDF	**2.32**	0.348	6.03	1	0.1	0.232
1,2,3,4,6,7,8-HpCDF	**40.5**	0.210	6.03	1	0.01	0.405
1,2,3,4,7,8,9-HpCDF	**1.42**	0.221	6.03	1	0.01	0.0142
OCDF	**239**	0.268	12.1	1	0.0003	0.0717
		Total TEQ				11.0

2005 WHO TEFs, ND = 0

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Anchor Environmental	**Service Request:**	E1100817
Project:	SJWP Residential Soil Sampling/090557-01.01	**Date Collected:**	8/11/11 1540
Sample Matrix:	Sediment	**Date Received:**	8/12/11
Sample Name:	SJRS010 - A	**Units:**	ng/Kg
Lab Code:	E1100817-011	**Basis:**	Dry
		Percent Solids:	78.7

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analytical Method:	1613B	**Date Analyzed:**	8/18/11 0020
Prep Method:	Method Soxhlet	**Date Extracted:**	8/12/11
Sample Amount:	10.544g	**Instrument Name:**	E-HRMS-01
		GC Column:	DB-225
Data File Name:	U141321	**Blank File Name:**	U141309
ICAL Date:	03/31/11	**Cal Ver. File Name:**	U141307

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDF	**2.31**		0.487	1.21	0.83	1.001	1

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDF	2000	568.559	28		24-169	0.78	1.062
37Cl-2,3,7,8-TCDD	800	467.782	58		35-197	NA	0.990

COLUMBIA ANALYTICAL SERVICES, INC

Client:	Anchor Environmental	**Service Request No.:**	E1100817
Project:	SJWP Residential Soil Sampling/090557-01.01	**Date Received:**	8/12/11
Sample Matrix:	Sediment/Wipe		

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

One wipe and twelve sediment samples were received for analysis at Columbia Analytical on 8/12/11.

The samples were received at 1°C in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

B flags – Method Blanks

The Method Blanks EQ1100384-01 and EQ1100385-01 contained low levels of OCDD at or below the Method Reporting Limit (MRL).

The associated compounds in the samples are flagged with 'B' flags.

C flags – 2378-TCDF Confirmation

Confirmation of the TCDF compound: When 2378-TCDF is detected on the DB-5 column, confirmation analyses are performed on a second column (DB-225.) The results from both the DB-5 column and the DB-225 column are included in this data package.

The valid result for the 2378-TCDF compound is reported from the confirmation column.

The confirmation results have been included on the TEQ summary pages.

K flags

CAS/Houston reports EMPC results that comply with Section 11.2.6 of the DLM02.2 SOW. An EMPC result is flagged with a 'K' flag.

Detection Limits

Detection limits are calculated for each congener in each sample by measuring the height of the noise level for each quantitation ion for the associated labeled standard. The concentration equivalent to 2.5 times the height of the noise is then calculated using the appropriate response factor and the weight of the sample. The calculated concentration equals the detection limit.

The TEQ results for each sample have been calculated by CAS/Houston to include:

- WHO-2005 TEFs ("The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds", M. Van den Berg et al., Toxicological Sciences 93(2):223-241, 2006)
- 2378-TCDF from the DB-225 column, when confirmation required
- Non-detected compounds are not included in the 'Total'

Client: Anchor Environmental
Project: SJWP Residential Soil Sampling/090557-01.01

Service Request: E1100817

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E1100817-001	SJRS001 - A	8/11/11	09:57
E1100817-002	SJRS001 - A - DUP	8/11/11	09:57
E1100817-003	SJRS002 - A	8/11/11	10:51
E1100817-004	SJRS003 - A	8/11/11	11:30
E1100817-005	SJRS004 - A	8/11/11	11:50
E1100817-006	SJRS005 - A	8/11/11	12:30
E1100817-007	SJRS006 - A	8/11/11	14:30
E1100817-008	SJRS007 - A	8/11/11	14:40
E1100817-009	SJRS008 - A	8/11/11	14:59
E1100817-010	SJRS009 - A	8/11/11	14:15
E1100817-011	SJRS010 - A	8/11/11	15:40
E1100817-012	RSRM - 900	8/11/11	16:19
E1100817-013	RSFW - 901S	8/11/11	14:05

Abbreviations, Acronyms & Definitions

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
MRL	Method Reporting Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent Recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
RRT	Relative Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-Noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

Data Qualifier Flags – Dioxin/Furans

- **B** Indicates the associated analyte is found in the method blank, as well as in the sample.

- **C** Confirmation of the TCDF compound: When 2378-TCDF is detected on the DB-5 column, confirmation analyses are performed on a second column (DB-225). The results from both the DB-5 column and the DB-225 column are included in this data package. The results from the DB-225 analyses should be used to evaluate the 2378-TCDF in the samples. The confirmed result should be used in determining the TEQ value for TCDF.

- **E** Indicates an estimated value – used when the analyte concentration exceeds the upper end of the linear calibration range.

- **J** Indicates an estimated value – used when the analyte concentration is below the method reporting limit (MRL) and above the estimated detection limit (EDL).

- **K** EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

- **U** Indicates the compound was analyzed and not detected.

- **Y** Samples that had recoveries of labeled standards outside the acceptance limits are flagged with 'Y'. In all cases, the signal-to-noise ratios are greater than 10:1, making these data acceptable.

- **ND** Indicates concentration is reported as 'Not Detected.'

- **S** Peak is saturated; data not reportable.

- **P** Indicates chlorodiphenyl ether interference present at the retention time of the target compound.

- **Q** Lock-mass interference by chlorodiphenyl ether compounds.

integral consulting inc.

SURFACE SEDIMENT/SOIL COLLECTION FORM

Project Name: San Jacinto Residential Project No. 090557-01 Page: 10

Date: 8/11/11 Crew: S. Werner, B. Souter, D. Keith

Weather: Hot / Dry

Sampling Method: Stainless Shovel

Time: 1535 Station: SJRS-010 Replicate: ____ Acceptable grab: ☑ Yes ☐ No

Bottom Depth: 6" Penetration Depth: 6" RPD Depth: ____

Analyses before homogenization: ☐ VOC ☐ Sulfides ☐ Other

Sample ID: SJRS-010-A

Type: ☐ cobble ☐ gravel ☐ sand C M F ☑ silt clay ☐ organic matter ☐ wood/shell fragments

Color: ☐ drab olive ☐ gray ☐ black ☑ brown ☐ brown surface

Odor: ☑ none ☐ slight ☐ moderate ☐ strong ☐ sulfidic ☐ petroleum ☐ other

Comments: 3210468.13

WAYPOINT: 13858551.27

Time: 1535 Station: SJRS-010 Replicate: ____ Acceptable grab: ☑ Yes ☐ No

Bottom Depth: 6" Penetration Depth: 6" RPD Depth: ____

Analyses before homogenization: ☐ VOC ☐ Sulfides ☐ Other

Sample ID: SJRS-010-A

Type: ☐ cobble ☐ gravel ☐ sand C M F ☑ silt clay ☐ organic matter ☐ wood/shell fragments

Color: ☐ drab olive ☐ gray ☐ black ☑ brown ☐ brown surface

Odor: ☐ none ☐ slight ☐ moderate ☐ strong ☐ sulfidic ☐ petroleum ☐ other

Comments: 3210502.60

WAYPOINT: 13858583.20

Time: 1535 Station: SJRS-010 Replicate: ____ Acceptable grab: ☑ Yes ☐ No

Bottom Depth: 6" Penetration Depth: 6" RPD Depth: ____

Analyses before homogenization: ☐ VOC ☐ Sulfides ☐ Other

Sample ID: SJRS-010-A

Type: ☐ cobble ☐ gravel ☐ sand C M F ☑ silt clay ☐ organic matter ☐ wood/shell fragments

Color: ☐ drab olive ☐ gray ☐ black ☑ brown ☐ brown surface

Odor: ☑ none ☐ slight ☐ moderate ☐ strong ☐ sulfidic ☐ petroleum ☐ other

Comments: 3210549.20

WAYPOINT: 13858582.39

Time: 1535 Station: SJRS-010 Replicate: ____ Acceptable grab: ☑ Yes ☐ No

Bottom Depth: 6" Penetration Depth: 6" RPD Depth: ____

Analyses before homogenization: ☐ VOC ☐ Sulfides ☐ Other

Sample ID: SJRS-010-A

Type: ☐ cobble ☐ gravel ☐ sand C M F ☑ silt clay ☐ organic matter ☐ wood/shell fragments

Color: ☐ drab olive ☐ gray ☐ black ☑ brown ☐ brown surface

Odor: ☑ none ☐ slight ☐ moderate ☐ strong ☐ sulfidic ☐ petroleum ☐ other

Comments: 3210508.05 DATUM: NAD 83 ALL SAMPLES COMPOSITED

WAYPOINT 13858371.04 STATEPLANE

Sample	X Corridinate	Y Corridinate	TEQ (dfMamDL/2) ng/kg
SJRS001	3218063.114	13860669.25	2.15
SJRS002	3218199.428	13860562.56	2.02
SJRS003	3218255.816	13860481.87	2.41
SJRS004	3218304.535	13860304.61	11.90
SJRS005	3218720.182	13859578.28	1.71
SJRS006	3212376.059	13858182.60	2.11
SJRS007	3212726.208	13858167.66	3.43
SJRS008	3213148.737	13857793.67	2.87
SJRS009	3213233.776	13857948.82	2.78
SJRS010	3210506.995	13858521.98	9.71